WHY AREN'T BIG SQUARE BALERS USED MORE IN KENTUCKY

Tom Keene
Extension Hay Marketing Specialist
University of Kentucky
Lexington, KY

The history of making hay dates back for centuries and centuries. When mankind began to grow crops and livestock rather than being nomadic, they had to have some type of forage to feed their livestock during the cold and winter months. Since that time there has been a slow and steady progression from harvesting material by hand to today's modern hay making equipment that maximizes time, labor, fuel, etc. However some countries to this day still use the methods that are thousands of years old when it comes to hay making.

Not only did farmers need hay for the winter months they also needed for traveling with their livestock. Whether it was across and ocean or across a continent, hay was a necessary commodity to bring with you when you were traveling any distance whatsoever. For instance, when building the transcontinental railroad, where the horses would haul the rails and the cross ties ahead of the track being laid, they needed hay especially when they were in the desert and mountains. In the book, "Nothing in the World Like It", author Stephen Ambrose cites hay costing $120.00 a ton in the mid-to late 1860's.

Soon after that hay nuking equipment began to be manufactured by individuals like Cyrus McCormick and then commercially by companies like International Harvester. From there we have never looked back when it comes to advancing and modernizing our haymaking equipment. From sickle bar mowers to stationery balers to self-propelled bale stackers to today's modern big balers, mechanization of hay making equipment has evolved dramatically.

We now have multiple baling and storing options for making high quality hay. We still have small square bales but the vast majority of hay nowadays is put up in big packages whether they be round bales (various size bales, mid-size square bales (3*3*8 or 3*4*8) or large square bales (4*4*8). Other packing options include baleage, pellets, cubes and loafs.

While those different type packages can be found nationwide, some areas of the country have more of one version of type of bales than other parts of the country. East

of the Mississippi river, round bales and small square bales are most prevalent. West of the Mississippi, big square bales are found in greater numbers.

In Kentucky, while any of those bales will get the job done, moisture is our sworn enemy when it comes to making high quality hay. Our high humidity levels here in the Ohio Valley make it very difficult to consistently bale hay at moisture levels in the 10 to 18% moisture range. The larger the bale the further the moisture has to travel from the center of the bale to escape during the curing process.

While size of bale is one concern, there are others that influence bale density; baler settings, tightness of wrapping of round bales, some forages are denser than others, plant maturity as well as what forage species is being put into the bale. An example might be that alfalfa in the bale is denser than orchardgrass, while orchardgrass would be denser than wheat straw.

The following chart shows different bale densities and how that can affect bale weight in a 5 * 5 round bale.

Effect of Bale Density on Weight			
Bale Width, ft	**Bale Diameter, ft**	**Bale Density lb/ft^3**	**Bale Weight, lb**
5	5	9.53	935
5	5	10.09	990
5	5	10.65	1,045
5	5	11.21	1,100
5	5	11.77	1,155
5	5	12.33	1,210
*Texas A&M, Texas AgLife Extension			

NOTES